

WHAT IS CLAIMED IS:

1. A process of producing porous films comprising the steps of melt kneading a composition comprising a polyolefin resin, a thermoplastic elastomer and a solvent; extruding and cooling the melt kneaded material into a sheet molding; rolling the sheet molding; and stretching and desolvating the rolled sheet molding, wherein the rolling is carried out under a condition such that the sheet molding after rolling has an elastic recovery rate as calculated by the following equation (1) of 20% or less:

$$\text{Elastic recovery rate (r) (\%)} = 100 \times (t - t_0)/t_0 \quad (1)$$

wherein t_0 represents a minimum clearance of a sheet rolling section in the rolling; and t represents a sheet thickness in the elastic recovery state after pressure release.

2. The process of producing porous films as claimed in claim 1, wherein the rolling is carried out under a condition such that a rolling coefficient k as calculated by the following equation (2) is 5 (times·min) or more:

$$\begin{aligned} &\text{Rolling coefficient (k) (times·min)} \\ &= \text{Rolling ratio (times)} \times \text{Rolling time (minute)} \end{aligned} \quad (2)$$

wherein the rolling ratio means a ratio obtained by dividing a sheet thickness before rolling by a sheet thickness after rolling; and the rolling time means a time when a pressure is acting.

3. The process of producing porous films as claimed in claim 1, wherein the rolling is carried out by a pressure roller type double belt pressing machine.

4. The process of producing porous films as claimed in claim 3, wherein the pressure roller type double belt pressing machine is one in which heat rolling and cold pressurizing are continuously carried out within one belt pressing machine.

5. The process of producing porous films as claimed in claim 4, wherein the heat rolling is carried out at a temperature between (the melting point of the polyolefin resin – 30°C) and (the melting point of the polyolefin resin – 10°C), and the cold pressurizing is carried out at 40°C or lower.

6. The process of producing porous films as claimed in claim 1, wherein the composition further comprises a crosslinkable, double bond-containing thermoplastic elastomer.

7. A process of producing battery separators, which comprises preparing a battery separator by the process of producing porous films as claimed in claim 1.